(4) This is a star of Group IV., showing several fine metallic lines in addition to those of hydrogen. The usual observations are required.

(5) The spectrum of this star is a fine one of Group VI. The usual carbon bands are wide and dark, and the subsidiary bands 4 and 5 are perfectly well seen (Dunér). It seems probable that favourable conditions of observation, which, unfortunately, are not common for low stars in our latitude, may reveal other secondary bands.

(6) This is another variable star of which the spectrum has apparently not been recorded. The period as determined by Baxendell is 121·4 days, and the magnitudes at maximum and minimum are 9·2 and 10·2 respectively. The maximum will be reached about April 5. (This is Baxendell's V Boötis.)

A. FOWLER.

CHARLES MARIE VALENTIN MONTIGNY.—It is with regret that we have to announce the death of Prof. Montigny, at Schaerbeek, on the 16th inst. Prof. Montigny was born on January 8, 1819, and was a member of the Royal Academy of Belgium, Astronomical Correspondent of Brussels Observatory, an officer of the Order of Leopold, and decorated with the civil cross of the first class. He is best known for his interesting researches on the scintillation of stars, which form the subject-matter of a series of papers communicated to the Brussels Academy. In the January number of *Himmel und Erde* a long description is given of the results of Montigny's observations, and the instrument he devised and used for the determination of the amount of scintillation on different nights, and for the same stars at different altitudes. It is well known that if a scintillating star is observed by means of an opera-glass or small telescope, and the instrument tapped, the star appears to move and not the instrument; if the instrument is kept vibrating, the star will appear to move in a closed curve, along which different colours repeat themselves. The scintillometer devised by the late Prof. Montigny for investigating these appearances consisted of a small disk which could be whirled round in front of the eye-piece so that the star appeared to describe a circle in the field of the telescope. The circumference of this circle was made up of a regular sequence of colours, of which blue, yellow, and red were predominant. If the rate of motion of the disk be known, then by counting the number of times the colours were repeated the number of changes of colour a second may be found. All the causes affecting the scintillation of stars were investigated, and the relation of the amount to the character of the spectrum, the state of the atmosphere, and the colour of the star, made the subject of inquiry. The results obtained by means of this ingenious instrument are important, and the whole work on scintillation done by the deceased astronomer stands as a fitting monument to his memory.

AN OBSERVATORY AT MADAGASCAR.—A new Observatory has been established at Tananarivo under the direction of the Jesuit fathers, and with the concurrence of the French Government. The site chosen is a hill a short distance to the east of the town, and about 4400 feet above sea-level, making the Observatory one of the highest in the world. It already possesses an equatorial, a meridian instrument, and all necessary apparatus for meteorological observations; and a photographic telescope will shortly be provided for solar observations.

THE ADMINISTRATION OF FOREIGN FISHERIES.

THE following notes[1] were drawn up at the request of the late Lord Dalhousie just before he became seriously ill. The failure of his health and his absence from home—before the sad bereavement and shock which terminated in his death—prevented him perusing them, though the substance of much that appears in the subsequent pages formed the theme of several conversations with him. His familiarity with the sea, his wide knowledge of the fisheries, his upright and generous bearing, and his sound judgment, would undoubtedly, if he had been spared, have been of infinite service to the Department (which, probably, sooner or later, he would have reorganized very thoroughly). No greater loss, indeed, has happened to the fisheries in recent times.

The United States Fish Commission is managed by a Director, who is more or less autocratic and irresponsible; though in the case of the late Prof. Baird the Americans were extremely fortunate in having a Director possessed of great administrative power and tact, and who never utilized the resources at his disposal for personal display or advancement. However able this Director may be, the system has its disadvantages, and is less suitable than a mixed Commission of men of position, who would have an opportunity of expressing their views as to the work to be carried out. Moreover, the American plan is less safe than a responsible head—that is, a chief under the control of a Board or Commission of those who are not necessarily specially skilled. It is possible, indeed, that, as the fisheries are at present administered in the United States, a considerable expenditure of money and of time annually takes place, which under other methods might be curtailed. The practical advances made by the Americans have in the main been confined to the fresh-water fisheries—that is, the propagation of the salmon-tribe, carp, and other fluviatile and lacustrine forms. The Marine Department has not yet succeeded in making any noteworthy improvement in sea-fisheries, though much money has been spent, and a large Annual Report is regularly issued. This Report contains not only the work accomplished by the staff of the Department, but reprints and translations of papers relating to the fisheries of other countries. There is, therefore, a wide difference between the condition in this country (where the observations connected with the fisheries have often to be published by Societies or independent journals) and the lavish expenditure on the other side of the Atlantic.

In France, again, the management of the fisheries is exclusively vested in the Minister of Marine at the Bureau des Pêches. At the head is a Director charged by the State with the inspection of the fisheries. For the scientific study of the questions pertaining to the marine fisheries the chief station is at Boulogne—though the Minister of Agriculture, under whom the station was constructed, also gave a small subsidy to the Zoological Laboratory at Villefranche (Alpes Maritimes) for the study of diverse questions concerning fishes and oysters—and this was founded by a subsidy from the town and the Chamber of Commerce. The advances made by M. Coste and others in the fresh-water fisheries of France are too well known to need further attention. France is fortunate in having a series of excellent marine laboratories, at which considerable advances have already been made in regard to the food-fishes, and in collateral scientific subjects. The names of MM. Lacaze Duthiers, Giard, Marion, Barrois, Pouchet, Sauvage, and others, are sufficient guarantees that the work of the fisheries and cognate subjects will be worthily carried out.

In Norway there is no special Fishery Board, but the Governmental Department of the Interior manages both the marine and fresh-water fisheries. As yet only a general inspector for the latter has been appointed at a fixed salary. For each of the more important marine fisheries, however, a so-called *opsynschef* is engaged by the Government, to see to the administration of justice during the time the fishery is going on. Moreover, an annual grant of 16,000 kr. is granted to the Society for the Advancement of Norwegian Fisheries in Bergen. The aims of this Society, which has various branches in towns along the coast, are chiefly practical, such as the improvement of fishing implements, the most suitable and successful preparation of the fishery products, and other features. It also has a special department for the artificial hatching of the food-fishes, in connection with the laboratory at Arendal, on the southern coast. The expenses of this establishment are partly borne by the Society just mentioned, and partly by private subscription. It is at this laboratory that M. Dannevig has done so much good work in the artificial rearing of cod, oysters, and lobsters, in the former case having succeeded in keeping the fishes till the end of the second year, and when of considerable size (14–16 inches).

For strictly scientific investigations in connection with the marine fisheries the Storthing grants an annual sum of 4800 kr. These investigations have for many years been chiefly carried out by Prof. G. O. Sars, whose observations on the Lofoten cod-fisheries, and the development of the cod, are well known and justly esteemed, while, as a worthy son of a distinguished father, he has in other departments of zoology contributed largely to our knowledge. Other naturalists have also been engaged in the work, chiefly in regard to the herring-fisheries. Prof. Sars, moreover, with a view of protecting the marine fisheries, has to report on every contrivance proposed, and in regard to restriction in the use of certain fishing implements, besides giving his advice concerning the regulation of close seasons and similar subjects. He has to present to the Department his opinions on these matters before the proposals are brought in for the Storthing. In 1886 much discussion took place in the latter assembly concerning a more central management of the Fishery Department, and the establishment of a special office for a chief director for all the fisheries, together with a staff of subordinate inspectors. This arrangement is considered in Norway to be of considerable importance, but unfortunately no individual is known who unites in himself all the many qualifications for this important office. The following are the grants sanctioned for the financial year from July 1, 1886, to June 30, 1887, for the Fishery Institutions:—

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[1] For information on various points relating to the subject, I have to thank Profs. Alex. Agassiz, Hubrecht, Möbius, Lovén, and G. O. Sars, Herr von Behr, Drs. Anton Dohrn, Lindeman, Nansen, and Sauvage; while Mr. Hoyle kindly aided me with the Norwegian statistics.

(1) For practical scientific investigation regarding the sea fisheries, the last Parliament voted 4800 kr.[1]

It is proposed to increase this by 2400 kr., to be given to Hr. Lumholtz.

(2) As a contribution to the Society for the Encouragement of the Norwegian Fisheries, the last Parliament voted 16,000 kr., of which 4000 kr. were to be given to the affiliated Societies of Tromsö, Stift, and 2000 kr. to the Institution for Pisciculture in Arendal.

It is desired to increase this sum to 32,000 kr. for the coming year; the work of the Society depends upon this grant, because the fishermen cannot be expected to contribute much, and the needs of the Society are always increasing. The expenses for the coming year are estimated at 34,910 kr., of which 12,000 kr. will be needed for the regular expenses of the Society. It is proposed that the fisheries should be under a central direction with subordinate officials, and thus the Society would be relieved of a large part of its expenses.

The Department decided, however, that the grant should be retained at its original amount, 16,000 kr.

(3) For inspection and administration of the law at Lofoten cod-fishery, 31,950 kr. were voted.

(4) For increased police inspection of the mackerel-fishery at Uleholmene 200 kr. were voted.

(5) For increased police inspection of the spring cod fishery in Namdal 1000 kr. were voted.

(6) For increased police inspection of the spring cod-fishery in Finmark 7200 kr. were voted.

(7) For increased police inspection of the spring cod-fishery in Söndmöre 3600 kr. were voted.

(8) For inspection and administration of the law at the herring-fishery 12,000 kr, were voted.

(9) For the encouragement of fresh-water fisheries 24,040 kr. were voted.

This sum it is desired to increase to 31,000 kr.

A. *Expenditure.*

			Kronas.
I. For practical scientific investigations into the sea fisheries, of which 2400 kr. form an honorarium for Hr. Lumholtz			7,200
II. Contribution to the Society for the Encouragement of Norwegian Fisheries			16,000
III. For inspection, &c., of cod-fisheries at Lofoten (1200 kr. only in the event of there being a congregation of fishermen at Raftsund) ...			31,950
IV. For increased police inspection at:—			
(1) Mackerel-fishery at Uleholmene		200	
(2) Spring cod-fishery at Namdal ...		1,000	
(3) ,, ,, Finmark ...		7,600	
(4) ,, ,, Söndmöre		3,200	
			12,000
V. For inspection, &c., at the herring-fishery in 1887			12,000
VI. For the encouragement of fresh-water fisheries:			
(1) To salary and office help for the inspector (400 kr. for personal expenses of present inspector)..		3,640	
(2) To two permanent assistants ...		3,400	
(3) To travelling expenses of the above officials in the fishing districts, and for travelling expenses of temporary assistants.		5,000	
(4) Inspection of salmon-fishery ...		7,600	
(5) For experimental transport of Wener salmon		200	
(6) For experimental marking of salmon and sea-trout		400	
(7) For encouragement of artificial spawning		1,000	
(8) Contribution:—			
a. For erection of salmon ladders at water-fails in accordance with plans given by the inspector in 1884 ...	1,667		
b. For erection of a salmon ladder at Haaelven in accordance, &c.	300		
		1,967	
			23,207
			102,357

B. *Income.*

Salvage of nets and apparatus at Lofoten	600

In Sweden there is, strictly speaking, no Central Government Office for the fisheries. The fishery laws, and other special measures relating to the fisheries, are decreed by the Governors of the provinces or by the Department of the Interior. Previously, however, to the promulgation of any new law, the Governor must, pursuant to the Royal Ordinance of November 7, 1867, consult the Intendant of the Fisheries, who, conjointly with two assistants and one Instructor in Fish-breeding, are the public functionaries in connection with the fisheries in this country. Before the appointment of these officials, in 1864, there was (from the year 1855) a special Fishery Overseer (*Fiskeritillsyningsman*), or Inspector of the Sea Fisheries, in the province of Gothenburg and Bohus. He receives a salary from the Agricultural Society of that province, with subvention from the Crown, and is subordinate to the Governor of the province. The Intendant of the Fisheries and his assistants are under the control of the Royal Academy of Agriculture in Stockholm.[1]

The duties of the Intendant of the Fisheries are:—

(1) To investigate, with the aid of his assistants, the fisheries of the country.

(2) To propose or examine drafts of fishery laws or other measures for the improvement of the fisheries.

(3) To assist proprietors of fisheries with advice for hatching fishes, or with other measures for a rational management of the fisheries.

(4) To prepare and elaborate the fishery statistics.

(5) To control and direct the labours of the assistants and the fishery overseers.

Persons desiring the assistance of the fishery officials have to lodge intimation with the Royal Academy of Agriculture, and then the Intendant submits to the Academy a plan for the labours and the journeys of the fishery officials for the ensuing year. A fixed sum of 3500 kr. (about £198, or £83 for the Intendant and £55 for each assistant) is assigned for the travelling expenses of the fishery officials. Those requesting assistance have to pay 6*s.* per day.

The Intendant has to present annually a brief report on the labours of the fishery officials, and from time to time more detailed notices of the fisheries of the country. The Inspector of the Sea Fisheries of Gothenburg and Bohus submits an annual report on those fisheries to the Agricultural Society of the province.

The legal proceedings relating to the fisheries are briefly as follow:—If one or more proprietors of fisheries desire new or modified laws for the fisheries in their waters, or the Intendant of the Fisheries proposes such, the matter is submitted to the Governor of the province. The Governor then convokes all persons interested to meet and discuss the question. If the Governor, after having consulted the Intendant of the Fisheries, judges the proposals of the majority of the fishery proprietors suitable for the improvement of the fishery, those proposals are sanctioned, either as they stand, or with the necessary modifications. Anyone who dissents from the judgment may appeal to the Department of the Interior.

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[1] About 18 kronas = £1 sterling.

[1] The allowances of these officials from the Treasury are as follow:—Intendant, £250; two assistants, respectively, £111 and £83.

Germany, likewise, has no special central or chief authority for the management of the fisheries. The Empire has no right of control or even of cognizance of the fisheries. The State, however, gives annually a small sum to the German Fisheries Union (Fresh-water Fisheries). The control and management of the fisheries is therefore a matter for the different States which form the Empire. All these (Prussia included) have Inspectors of Fisheries (*Oberfischmeister*) and master-fishers (*Fischmeister*), but their duty only relates to the fiscal interests of the States and the rigorous observance of the fishery laws. They also give directions to the fishermen concerning the use of new and suitable fishing apparatus.

The control of the fresh-water fisheries of Prussia is vested in the Minister for Agriculture, Woods, and Forests, but there is no special Board for Fisheries. The various questions are worked up by clerks as they arise, as also is the preparation of Bills for the Prussian Chambers. In like manner the provincial control, the district (*Regierung*) control, and the Kreiss or county control, are carried out respectively by the Oberpräsident, the Regierungs Präsident, and the Landrath.

The Deutsche Fisherei Verein, of which Herr von Behr is chairman, is an independent association. It receives occasionally money grants from the Prussian Minister from a fund voted by the Prussian Chambers, and a regular grant, amounting at present to £1500 a year, from the German Parliament, towards the encouragement of fish-breeding throughout Germany.

Prussia for a series of years has had at Kiel a Commission for scientific researches in the German seas. It consists of four members, viz. a zoologist, a botanist, a physiologist, and a physicist. The present members are Professors in the University of Kiel, and Prof. Möbius (zoologist) is chairman. This Commission is placed under the control of the Ministry of Agriculture, and from that body it receives annually a sum of 9600 marks (£480) for general and personal expenses. The Commission publishes meteorological observations, statistics of the fisheries on the Baltic stations, and reports on scientific researches.

Much valuable work has been accomplished by this Commission in regard to the life-histories and development of fishes and the pelagic animals of the Baltic. Amongst other recent suggestions is one regulating the saleable size of certain fishes in special localities, *e.g.* the salmon and salmon-trout being fixed at 19½ and 11 inches respectively, the flounder at 6 inches, and the plaice at 7.

The Fishery Board of the Netherlands (Collegie voor de Zeevisscherijen) is composed of fifteen members, one of whom is president, and a secretary, who is not actually a member. All are nominated by the Crown, and the president out of a leet of two drawn up by the Board itself. The president and secretary form a kind of standing Committee by whom the every-day business is managed. All important affairs, however, have to come before the meetings of the Board, of which there are at least two yearly, viz. one in summer and one in winter. Very often the meetings are more numerous.

The majority of the members must be free from any direct interest in the fishing trade or the fisheries industries. The minority may, on the contrary, represent such interests. Actually the minority is composed (1) of a specialist for the herring-fishery—a great shareholder and head of a large fishing firm; (2) a member for the line-fishing; (3) one for the oyster industries; (4) one for the salmon and fresh-water fisheries; (5) one for the herring and cod fisheries; and (6) one for the fisheries of the Zuyder Zee.

Further, there are on the Board one shipowner and shipbuilder; one naval officer; several lawyers, several local authorities; and two zoologists.[1]

The members receive no salary—only their travelling expenses. Whenever a question is laid before the Board either by Government or at its own invitation, the President selects a special committee of three or five members to study, discuss it, and to draw up a report, which is then circulated, and afterwards, if necessary, discussed and voted about. All questions concerning fishery legislation are thus brought before the Board, and generally settled according to its advice.

There is a yearly grant (dating back, however, only a few years) of about £250 for experiments on the fishing industries, fish-culture, &c. Another £1000 are yearly devoted to salmon-culture, this sum being disbursed to the most successful fish-culturists at the rate of 5*d.* for a salmon a year and a half old (smolt), and two-fifths of a penny for one a few months old (parr). If the number of parr offered exceeds the sum which is available after the full value has been paid for the smolts, the culturists must either acquiesce in a reduction of price or keep their fishes. One or more members of the Board are always present when the fishes are set free into the rivers.

Since 1881 certain legal restrictions have been made with regard to the fisheries of the Zuyder Zee, and a staff of police organized on the inland sea, the chief officer being directly under the orders of the President of the Board. The same is the case with the police on part of the oyster territories. Those in Zealand have been, since the fresh start in 1870, under a special local Board.

In Italy the affairs relating to the fisheries are managed by the Minister of Agriculture, &c. The Minister nominates a Central Committee of twenty-four members. These consist of scientific men, magistrates, persons industrially interested in the fisheries, and some members of the Legislature (M.P.'s). Twelve members are elected or reappointed every year. The meetings of this Committee do not take place at certain fixed periods, but only by invitation of the Minister, who submits to the Committee the material to be discussed.

Besides the Central Committee there are a series of local Committees throughout the kingdom. These consist of the Captain of the Port, a zoologist, and technically experienced men. Their term of office lasts for three years from the date of appointment. The Regulation is published in the *Annali dell' Industria*, 1882, by the Ministry of Agriculture, Direzione dell' Industria e Commercio.

The duties of these local Committees are as follow:—

(1) To study and to propose all new regulations rendered necessary by experience.

(2) To collect the material for annual statistics.

(3) To give, on the demand of the Government, the Provinces, and the Communes, their opinion on matters directly or indirectly connected with the fisheries.

(4) To further the diffusion of the best methods of fishing and the advancement of the industries connected with them.

(5) To "render popular" the knowledge regarding the production, food, and diffusion of fishes and other useful marine animals.

From a consideration of the foregoing remarks on the Commissions, Boards, or Departments of foreign countries, it would appear that a central authority composed of a single individual, as in America, has certain disadvantages which can only be overcome by a rare combination of scientific eminence, administrative skill, and unbiassed judgment. It has, moreover, been a costly experiment; and it cannot be said that the Americans—even in the case of the cod—have succeeded so well as Dannevig at Arendal, in Norway, with the moderate resources at his disposal. It cannot be questioned, however, that the liberality of the Government of the United States has greatly aided scientific inquiry into marine life in general. Moreover, their efforts to increase the fresh-water fishes are most praiseworthy, and indeed in this they give us a good example, for there are still many fresh-water streams and lochs that would be of great value to the country if scientific fish-culture were put on a proper footing. The instance of the Outer Hebrides, *e.g.* North Uist, is sufficient in our own country. From the top of the Lee Hills the eye rests on a multitude of lochs—fresh-water and salt—which seem to be almost as extensive in superficial area as the shreds of land between them. In many of these, trout, salmon-trout, and salmon are found, so that one familiar with the agricultural poverty of these regions would not hesitate to place the culture of the water far before that of the land in regard to remuneration. A well-organized system of pisciculture in connection with these lochs would effect a revolution in the financial affairs of the people, and greatly supplement the food-supply for the community.

The French system does not seem to offer any suggestion of note in regard to the administration of the marine fisheries. The early labours of M. Coste and others in the culture of trout and salmon have, however, been of great service both to the adjoining Continental States, to us, and to America. It must not be forgotten also that M. Coste was one of those who took much interest in the Stormontfield experimental station on the Tay, and personally, along with Mr. R. Buist, aided its establishment under the Committee of Proprietors.

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[1] This account does not quite correspond with the view published by the Fishery Board in their Sixth Annual Report, Part III., p. 305, for it is there stated that in Holland "There is a State Commission for Sea Fisheries, chiefly composed of naturalists and scientific men."

Much that is useful for the purposes of administration may be learned from Norway, especially in connection with the Society for the Advancement of Norwegian Fisheries in Bergen, a place so classic to marine zoologists, from the days of Michael Sars to those of Fridtjof Nansen. Nowhere in Scotland can we point to a series of open-air reservoirs of pure sea-water, such as at Arendal, in which larval fishes can be raised to post-larval and subsequent stages; though at Stonehaven an enclosure of this kind formerly existed, and was used about thirty years ago in experimenting with young salmon (smolts). Yet no place is better fitted—both scientifically and economically—for such an arrangement than St. Andrews, as has indeed been often pointed out. The Norwegians are also fortunate in having the services of an able and original naturalist—trained from boyhood in marine zoology, besides others of European reputation. Sweden, though rich in names well known wherever zoology is studied, *e.g.* Lovén, places the direction of the fisheries under the Academy of Agriculture, the Governors of the provinces, and the Intendant; while the Inspector of the Sea-fisheries of Gothenburg and Bohus submits a special report to the Academy. The arrangements seem to work fairly, but it is doubtful if any feature of the system would be of advantage to this country.

No central authority for the whole of Germany yet exists, each of the States having Inspectors of Fisheries. Prussia, however, has the Special Commission at Kiel, the scientific work of this body being very much in its own hands. It has done good service in regard to the scientific aspects of the marine fisheries. The encouragement held out by the Deutsche Fisherei Verein to fresh-water fisheries is noteworthy and commendable.

One of the most satisfactory arrangements is seen in the Fishery Board of the Netherlands, in the composition of which all interests have been consulted. Moreover, the recent appointment of a scientific Superintendent of the Fisheries (viz. Dr. P. Hoek, an able zoologist) is important. The names of Hubrecht and Hoffman, who represent scientific zoology on the Board, are a sufficient guarantee that both tact and talent are at the service of the State. The solid scientific work done in the department by Profs. Hubrecht and Hoffman would alone give the Dutch Board a reputation, and when we add the names of other workers who have aided it, the position is considerably enhanced. Further, the mode by which scientific questions are referred to special committees—say of zoologists or physicists—and their reports thereon dispassionately discussed at meetings of the whole Board, obviates the possibility of the mistakes caused by a committee having perhaps only a single head to direct it in a particular inquiry.

The Italian system is satisfactory so far as the composition of the Board goes, though it seems to be a large one for efficiency, and the somewhat irregular nature of the meetings would hardly suit the methodical system generally followed in this country. The short period of office (three years), is perhaps not of much moment if re-election of the right men takes place. The fine Zoological Station at Naples under Dr. Dohrn (who, however, is too closely occupied to serve on the Central Committee of the Fisheries), gives the Italian Government a source of independent and reliable information, and of a different kind from that derived from the servants of a Board. The establishment of hatching stations, and the series of local committees throughout the country are features worthy of note, especially if due care be taken in the composition of the latter, so as to avoid the entrance of those who trade, it may be, on the credulity or ignorance of the fishing population.

W. C. McIntosh.

SCIENTIFIC SERIALS.

L'Anthropologie, paraissant tous les deux mois, tome i. No. 1, 1890 (Paris).—The first number of the new French review of anthropology, formed by the amalgamation of the older *Revue d'Anthropologie* and the *Revue d'Ethnographie*, begins with an article by Dr. Topinard, one of its joint editors, on the skull of Charlotte Corday, which ranked among the most interesting of the curious contents of the anthropological section of the Paris Exhibition, to which it was presented by Prince Roland Bonaparte. The author explains that, in making choice of this special skull, his object is not to compare its craniological characteristics with the moral disposition historically attributed to the individual to whom it had belonged, but simply to make it the text for an exposition, which might serve our own and future students as a lesson for the examination and description of an isolated skull after the precise methods taught by Broca, and having regard to the present condition of our science. In accordance with this object, Dr. Topinard, confining himself almost entirely to craniometrical determinations, of which he gives a most comprehensive series, together with several well-drawn illustrations, only occasionally enters into the comparative relations presented by this cranium to other isolated crania. From this exhaustive lesson in craniometry it would appear that the skull of Charlotte Corday closely accords with the typical form of the female skull, established by Broca as characteristic of Parisian women, deviating only from the normally perfect feminine cranial type in presenting a certain flatness of the frontal region, and some traces of jugular apophysis.—The Bronze Age in Egypt, by M. Montélius. The author, in opposition to the opinions of Lepsius and Maspéro, believes that the use of iron was not known in the valley of the Nile as early as bronze which was probably fabricated 6000 B.C., and that the use of the former metal was not sufficiently common to justify us in speaking of an Iron Age in Egypt before 2000 B.C. He, moreover, believes that we must consider the era of Egyptian civilization as belonging mainly to the Bronze Age.—A short notice of the works of Alexander Brunias, by Dr. E. T. Hamy.—On the rock-sepulchre of Vaphio, in the Morea, by M. S. Reinach. The exploration of this tumulus was undertaken last year at the cost of the Archæological Society of Athens under the direction of M. Tsountas, and although the contents have not yet been fully examined, there can be no doubt of their extreme importance to archæology, as it has been proved beyond question that this rock-sepulchre had remained intact till the present time. It appears from the report of M. Tsountas that the poniards and other implements, together with many of the numerous funereal objects brought to light by the explorations at Vaphio, are similar to the remains obtained at Mycenæ. Among these finds special interest attaches to two golden goblets carved in strong relief, representing both clothed, and almost nude, figures, engaged in the hunting and taming of wild bulls. M. Reinach proposes in a future number of this journal to discuss the Vaphio tumulus more fully, but in the meanwhile he appeals to English archæologists to test the accuracy of a statement published in 1813 by the German traveller Baron von Stackelberg, that the so-called Treasury of Atreus at Mycenæ had a few years earlier been ransacked by Veli Pasha, who was said to have disposed of part of its treasures to Lord North. Dr. Schliemann questions the truth of this report, but M. Reinach is of opinion that it bears evidence of authenticity, deserving the notice of Englishmen, and he hopes, in the interests of archæological science, that some of these precious objects may yet be found in one or other of the great English collections.—We may remark, in conclusion, that the present review surpasses its predecessors in the excellence of its printing and its illustrations, while it has the great advantage of being edited by MM. Cartailhac, Hamy, and Topinard. In the space allotted to the consideration of the scientific literature of various countries, to which more than half the entire volume is devoted, there are various notices of Russian, Hungarian, and other works, not generally accessible to the ordinary reader; but we trust that in future numbers the reports of English works and memoirs will not, as in the present number, be drawn exclusively from the Quarterly Journal of the Royal Geographical Society of London.

American Journal of Science, March 1890.—Sedgwick and Murchison: Cambrian and Silurian, by Prof. James D. Dana. The relations of these two geologists to one another, and to Cambrian and Silurian geology is given. The full paper appeared in NATURE of March 6 (p. 421).—Notes on the Cretaceous of the British Columbian regions; the Nanaimo group, by George M. Dawson.—Celestite from Mineral County, West Virginia, by George H. Williams. A large number of celestite crystals, from an extensive railroad cutting into a bluff of lower Helderberg limestone, has been investigated.—A method for the determination of iodine in haloid salts, by F. A. Gooch and P. E. Browning.—On the mineral locality at Branchville, Connecticut, fifth paper, by George J. Brush and Edward S. Dana; with analyses of several manganesian phosphates, by Horace L. Wells. A new member of the triphylite group—a sodium-manganese phosphate, which has been called natrophilite—has been found, and the rare mineral hureaulite identified in the Branchville minerals.—A simple interference experiment, by Albert A. Michelson. Two pieces of plane glass, silvered on